United Nations A/CN.4/580

General Assembly

Distr.: General
6 March 2007

Original: English

International Law Commission
Fifty-ninth session
Geneva, 7 May-8 June and
9 July-10 August 2007

Fourth report on shared natural resources: transboundary groundwaters

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07-26010 (E) 260307

I. Introduction

1. The International Law Commission, at its fifty-fourth session in 2002, decided to include the topic "Shared natural resources" in its programme of work.[1] It proceeded with the examination of the topic based on the three reports (A/CN.4/533 and Add.1, A/CN.4/539 and Add.1 and A/CN.4/551 and Corr.1 and Add.1) submitted by the Special Rapporteur, who proposed a step-by-step approach to the topic beginning with transboundary groundwaters. The Commission, at its fifty-eighth session in 2006, adopted on first reading draft articles on the law of transboundary aquifers consisting of 19 draft articles, together with commentaries thereto.[2] It also decided to transmit the draft articles, through the Secretary-General, to Governments for comments and observations, with the request that such comments and observations be submitted to the Secretary-General by 1 January 2008.[3]

2. In the debate on the report of the Commission on the work of its fifty-eighth session held in the Sixth Committee during the sixty-first session of the General Assembly in 2006, delegations welcomed the completion of the first reading of the draft articles on the law of transboundary aquifers and made their comments and observations[4] on all aspects of the draft articles and the commentaries thereto and on final form of the draft articles as requested by the Commission.[5] The Special Rapporteur wishes to defer the examination of these comments and observations until January 2008, when he will have received further written submissions from Governments.

3. There is, however, one aspect that the Commission needs to address at its fifty-ninth session in 2007. That is the aspect concerning the future work on the topic "Shared natural resources", in particular the relationship between the work on groundwaters, on one hand, and the work on oil and natural gas, on the other hand. The Commission decided to focus on transboundary groundwaters for the time being but the question of oil and natural gas was raised by some members from time to time. In response to the queries from those members, the Special Rapporteur clarified his position in his summing up of the debate in 2005 that due attention should be given to the question of oil and natural gas before consideration of the second reading of the draft articles on the law of transboundary aquifers was completed because the proposed measures relating to aquifers might have implications for the future work of the Commission on oil and natural gas and conversely current State practice and norms relating to oil and natural gas might also have implications for the work of the Commission on aquifers (see A/CN.4/SR.2836). The Working Group on Shared Natural Resources, which was established to consider substantive elements of the draft articles on transboundary

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[1] *Official Records of the General Assembly, Fifty-seventh Session, Supplement No. 10* and corrigendum (A/57/10 and Corr.1), para. 518.

[2] Ibid., *Sixty-first Session, Supplement No. 10* (A/61/10), paras. 75 and 76.

[3] Ibid., para. 73. See also General Assembly resolution 61/34, paras. 2 (c) and 5.

[4] *Official Records of the General Assembly, Sixty-first Session*, Summary records of the Sixth Committee. A/C.6/61/SR.13-16, 18 and 19; and Topical summary of the discussion held in the Sixth Committee of the General Assembly during its sixty-first session, prepared by the Secretariat (A/CN.4/577).

[5] *Official Records of the General Assembly, Sixty-first Session, Supplement No. 10* (A/61/10), para. 26.

aquifers, informally requested the Special Rapporteur to present a preliminary study on oil and natural gas to the Commission at its fifty-ninth session in 2007.

4. During the debate held in the Sixth Committee in 2006, delegations also commented on future work on the topic "Shared natural resources" (see A/CN.4/577, para. 24). Some delegations were of the view that once the Commission had completed its codification on groundwaters, it should turn its attention to the other shared natural resources such as oil and natural gas,[6] while some others called on a decision on future work to be made only after the completion of the draft articles on transboundary aquifers, expressing concern regarding the complexity of taking up oil and gas[7] or doubting the need for universal rules relating oil and natural gas.[8] Yet another delegation called on the Commission to commence its consideration of other transboundary resources during the second reading of the draft articles on the law of transboundary aquifers, expressing the view that the Commission would be foregoing the opportunity to develop an overarching set of rules for all shared natural resources.[9]

5. The question of oil and natural gas requires extensive studies not only on scientific and technical aspects but also on political and economic aspects. However, the current task of the Commission is limited to ascertaining whether it is appropriate for the Commission to proceed with the second reading of the draft articles on the law of transboundary aquifers independently from the work on oil and natural gas. For such purpose, the study could be rather brief. The present report is only intended to assist the Commission in making the required decision on the future work on transboundary aquifers.

II. Oil and natural gas

6. An oil or natural gas field is developed where a hydrocarbon accumulation has been discovered which is capable of producing a sufficient quantity of oil and/or natural gas for commercial purposes. The origin of oil and natural gas (petroleum) has been debated for many years. There were opposing theories. The first of them has assumed that the source material was inorganic. The second has argued that petroleum was derived from former living organisms. It seems that the second, in particular, the kerogen origin theory, now prevails. According to this theory, living organism (animal and plant) that was piled up at the bottom of ocean and lake has fossilized and formed, together with sediment, material termed as "kerogen". With the effect of bacteria, geothermal heat and underground pressure, kerogen turns into petroleum and residual water. Owing to underground pressure, petroleum and water moves upward through rock formation until it reaches cap rock which is less permeable. These are stored in the pores of the "reservoir rock". The reservoir rock is the geological formation, which usually consists of sands, sandstones or various kinds of limestone. Within the reservoir rock, petroleum and water are distributed vertically in the order of their densities. Natural gas is in the upper zone and oil in the lower zone when both oil and natural gas exist. Water is in the bottom zone.

[6] Mexico, Portugal, Poland, Indonesia and Greece.

[7] United States of America, United Kingdom of Great Britain and Northern Ireland and Russian Federation.

[8] Russian Federation.

[9] The Netherlands.

However, the gas zone is not sharply separated from the oil zone, while there is a transition zone between the oil and water zones, or between the gas and water zones in the absence of oil. The reservoir rock is usually of marine origin and the waters stored therein are termed "brine", which is salt water.

7. The process of formulation and accumulation of hydrocarbons as described in paragraph 6 above occurred over periods of hundreds of millions of years. That process may also be taking place today. However, for all practical purposes, any current recharge of hydrocarbons in existing oil fields is negligible. Accordingly, oil and natural gas should be considered as non-renewable resources.

8. The cap rock which overlies the reservoir rock functions as a seal that prevents further upward movement of oil and natural gas. And oil and natural gas are stored in reservoir rock under pressure, usually higher than atmospheric pressure. When a well is drilled through cap rock, oil and natural gas shoot up.

9. In the history of mankind, oil had been obtained in small quantities for many centuries from surface seepages. But it was not until 1859 that the modern oil industry was born when E. L. Drake successfully drilled the first oil well in Pennsylvania. The well produced only 30 barrels per day from a depth of 69 feet. With the development of exploration and production technology, such as seismic surveys and drilling techniques for several thousand metres, on one hand, and the rapidly growing demand for various uses on the other, petroleum production has increased by leaps and bounds in almost every continent and also on continental shelves. It is now taking place within the jurisdiction of more than 70 States and reached the level of 71.8 million barrels per day in the year 2005. Petroleum is the one of the most important energy resources and is also the raw material for various petrochemical products. Petroleum and its by-products are now internationally traded widely and in large quantity. Petroleum production and its trade have significant implication for the world economy and international politics.

10. In general, States or their political subdivisions retain the right to lease oil fields under their jurisdiction. Petroleum is explored, produced and traded by private oil companies or State enterprises. Activities of State enterprises in this context would be deemed to be of a commercial nature under current international law.[10]

11. It seems that transboundary oil fields exist in many parts of the world, in particular on continental shelves. As oil and natural gas are fluid, exploitation of such an oil field by one party may affect other parties in another jurisdiction sharing the same oil field. Information on this aspect is not readily available, however, and extensive research would be required in the future.

12. The problem of pollution itself of oil and natural gas stored in reservoir rock by exploitation seems to be minimal. On the other hand, the exploitation of an oil field and transportation of petroleum have a risk of causing a significant harm to the marine environment. Uses of petroleum as an energy source are emitting tremendous amounts of greenhouse effect gases and may be a major contributing factor to global warming. Waste disposal of petrochemical products is also causing environmental problems.

[10] United Nations Convention on Jurisdictional Immunities of States and Their Property; see General Assembly resolution 59/38 of 2 December 2004, annex.

III. Relationship between the work on groundwaters and that on oil and gas

13. As oil and natural gas often coexist in the same reservoir rock, they should be treated as one resource for the purpose of the work of the Commission. The reservoir rock and the natural condition of the oil and natural gas stored therein are almost identical to a non-recharging and confined aquifer. But the similarity between groundwaters on one hand and oil and natural gas on the other ends there.

14. Groundwater is the life-supporting resource of mankind and there exists no alternative resource. While oil and natural gas are important resources, they are not essential for life and there are various alternative resources. The consideration of vital human needs does not arise here. Survey and extraction of groundwaters take place on the land. A substantial part of survey and production of oil and natural gas takes place on the sea within the outer limits of continental shelves. Oil and natural gas are commercial commodities and their values are more or less determined by market forces. Groundwater is not internationally traded, with a few exceptional cases, and its value is determined by the social considerations of each community. The consideration of environmental problems of oil and natural gas requires an entirely different approach from that of groundwaters.

15. The Special Rapporteur considers that some of the regulations of the law of the non-recharging transboundary aquifer might be relevant to the question of oil and natural gas. Nevertheless, the majority of regulations to be worked out for oil and natural gas would not be directly applicable to groundwater. It means that a separate approach is required for oil and gas. If we try to link the work on groundwaters with the work on oil and natural gas, it would result in undue delay of the completion of the work on groundwaters. It is therefore the view of the Special Rapporteur that the Commission should proceed with and complete the second reading of the law of transboundary aquifers independently from its future work on oil and natural gas.